

THE INVENTION CLAIMED IS:

1. An acoustic impedance matching material having a plane face comprising a first homogenous matrix material with embedded fibers, clusters of fibers, or rods of a second material oriented perpendicular to the plane face.
2. The acoustic impedance matching material of claim 1 in which the acoustic impedances of the first and second materials are selected to promote sound transfer perpendicular to the plane face and to attenuate sound transfer parallel to the plane face.
3. The acoustic impedance matching material of claim 1 in which the first material is electrically non-conductive and the second material is electrically conductive.
4. The acoustic impedance matching material of claim 1 in which the first material is electrically conductive and the second material is also electrically conductive.
5. The acoustic impedance matching material of claim 1 in which the first material is electrically conductive and the second material is non-electrically conductive.
6. The acoustic impedance matching material of claim 1 in which the first material is electrically non-conductive and the second material is also non-electrically conductive.
7. A piezoelectric transducer comprising a piezoelectric layer and an adjacent layer of an acoustic impedance matching material having a plane face comprising a homogenous matrix material with embedded fibers, clusters of fibers, or rods of another material oriented perpendicular to the plane face.
8. The piezoelectric transducer of claim 7 in which the acoustic impedances of the first and second materials are selected to promote sound transfer perpendicular to the plane face and to attenuate sound transfer parallel to the plane face.
9. The piezoelectric transducer of claim 7 in which the first material is electrically nonconductive and the second material is electrically conductive.

10. The piezoelectric transducer of claim 7, wherein the fiber orientation is well defined.
11. The piezoelectric transducer of claim 7, wherein fibers are randomly distributed.